The facts that the species is known in considerable quantity in New England only in the western part, that at Plainfield it grows in alluvium not far from such calcicolous species as *Lobelia Kalmii* and *Parnassia glauca* (*P. caroliniana* of manuals), and that the Hartford trap produces a somewhat basic soil, suggest that the *Epipactis* prefers limy soil and that its distribution may be controlled by this preference. If so, the New Hampshire locality may remain on its easternmost limits.—ALAN W. UPHAM, East Woodstock, Connecticut.

THE SEVENTH CENTURY OF ADDITIONS TO THE FLORA OF VIRGINIA

M. L. FERNALD

(*Continued from page 452*)

*DIODIA VIRGINIANA L., var. **attenuata,** var. nov., planta gracillima; foliis anguste lanceolatis membranaceis basi apiceque valde attenuatis; fructibus subcylindricis 2.5–3.5 mm. diametro; calycis lobis linearibus.—VIRGINIA: open muddy and sandy borders of pools, alluvial bottomlands of Three Creek, Drewryville, Southampton County, September 14, 1941, *Fernald & Long*, no. 13,765 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.).

The common and typical *Diodia virginiana* is relatively coarse, with the thick lanceolate to narrowly oblong leaves sessile and only slightly tapering at tip; its fruits are ellipsoid, 3.5–5 mm. in diameter, and crowned by lanceolate calyx-lobes. Var. *attenuata* is slender, relatively weak, with thin or membranaceous narrowly lanceolate leaves attenuate to petiolar bases and to prolonged tips; the slender fruits only 2.5–3.5 mm. broad and crowned by slenderly linear calyx-lobes. It dominates large areas of open muddy and sandy depressions on the bottomlands of Three Creek, where during the summer and autumn of 1940 it was not subject to inundation; nor is it the immediate result of shading, since the open areas of these bottoms are no more shaded than are many other areas where the broader-leaved and thicker-fruited plant abounds. See p. 367.

D. VIRGINIANA, forma **hirsuta** (Pursh), stat. nov. *D. hirsuta* Pursh, Fl. i. 106 (1814). *D. virginiana*, γ. *hirsuta* (Pursh) Torr. & Gray, Fl. ii. 29 (1841).—With no definite range and likely to

occur throughout the range of the smoother typical *D. virginiana*, the hirsute plants seem to be a form rather than a true geographic variety.

VIBURNUM RAFINESQUIANUM Schultes. DINWIDDIE COUNTY: a characteristic undershrub in open argillaceous low woods just east of McKenney, nos. 14,024 and 14,421; our first station on the Coastal Plain, the low woodlands occupying a characteristic intrusion of Coastal Plain back into the Piedmont. See p. 373.

*CAMPANULA AMERICANA L., forma **tubuliflora,** f. nov., corollis cylindrico-tubuliformibus ad apicem angustatis clausis rare stylo exserto.—VIRGINIA: seeping calcareous wooded bluffs by James River, west of old Fort Boykin, Isle of Wight County, September 5, 1941, *Fernald & Long*, no. 13,772 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.).—A remarkable aberration, strikingly contradicting the supposed generic character (the rotate corolla) upon which some botanists maintain *Campanula americana* as a separate genus, *Campanulastrum* Small. See p. 362.

LOBELIA ELONGATA Small. NORFOLK COUNTY: fresh reed-marsh and swale along Northwest River near Northwest (the type-area), nos. 14,028 and 14,029, frequently with inflorescences virgate-forking. See p. 369.

DIPSACUS SYLVESTRIS L. ISLE OF WIGHT COUNTY: disturbed soil by James River, below old Fort Boykin, nos. 13,170 and 13,768; the only time we have noted it in Tidewater Virginia.

*ELEPHANTOPUS CAROLINIANUS Willd., forma **vestitus,** f. nov., caule superne ramibusque dense cinereo-tomentulosis hirsutisque, pilis patentibus.—VIRGINIA: low woods, Adams Swamp, south of Baines Hill School, Nansemond County, June 20, 1941 and September 12, 1941, *Fernald & Long*, nos. 13,172 and 13,780 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.). See p. 367.

Typical and common *Elephantopus carolinianus* has only the lower internodes with divergent pubescence, the upper ones and the branches merely with somewhat scattered appressed strigae. Forma *vestitus* is cinereous with short and close pubescence to the summit, the lower and middle internodes heavily tomentulose, the upper ones with close tomentulose pubescence mixed with spreading hairs. Some other collections from Nansemond County are transitional.

NOTES ON EUPATORIUM HYSSOPIFOLIUM (PLATE 737).—*Eupatorium hyssopifolium* L. Sp. Pl. ii. 836 (1753) was clearly described "foliis lanceolato-linearibus trinerviis integerrimis" and two early plates cited: one of *Eupatorium virginianum, folio angusto, floribus albis* of Dillenius (1732); the other of *Eupatoria*

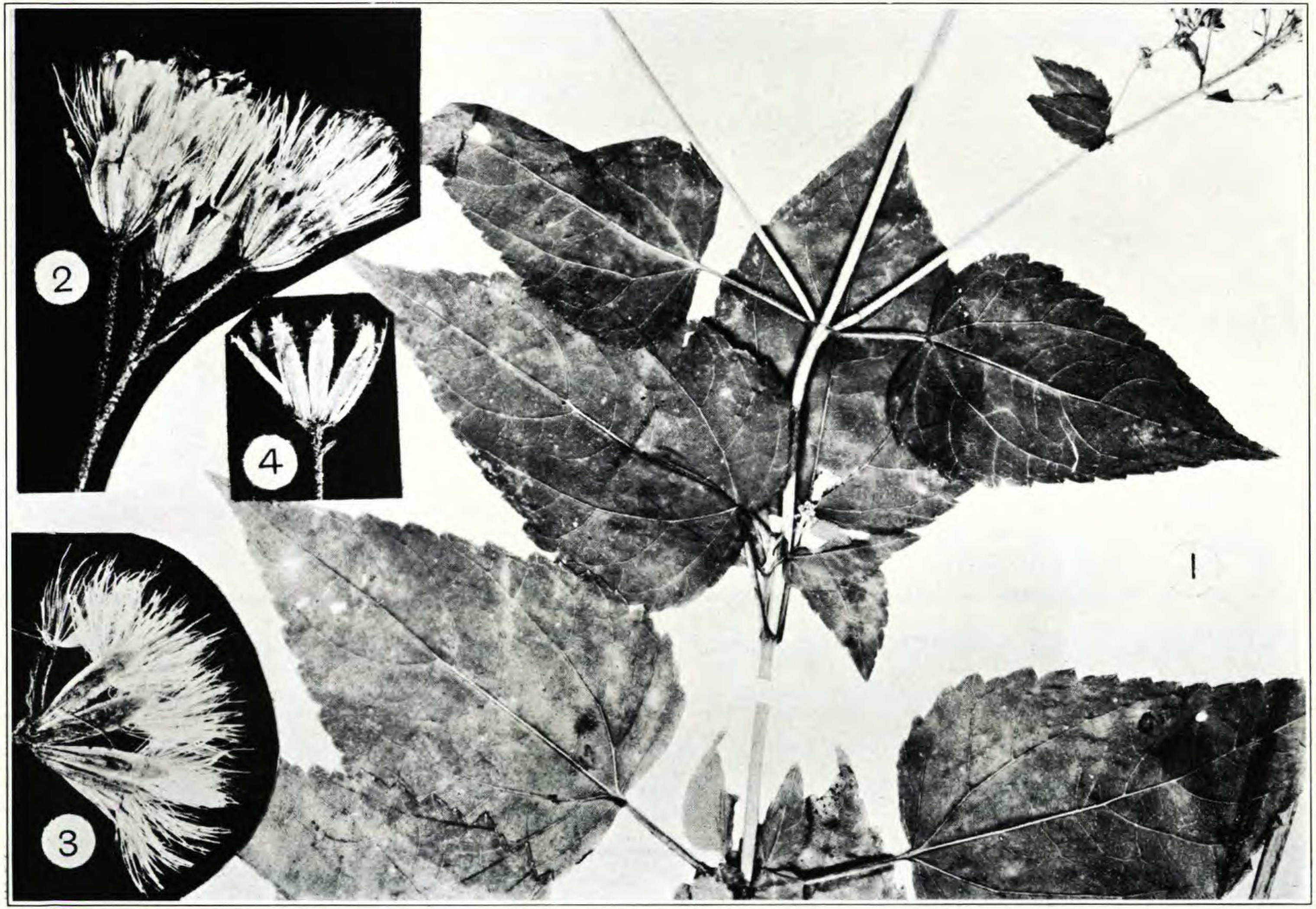


Photo. B. G. Schubert.

EUPATORIUM RUGOSUM, var. CHLOROLEPIS: FIG. 1, foliage, × 1; FIGS. 2–4, heads and involucre, × 4; all from TYPE.

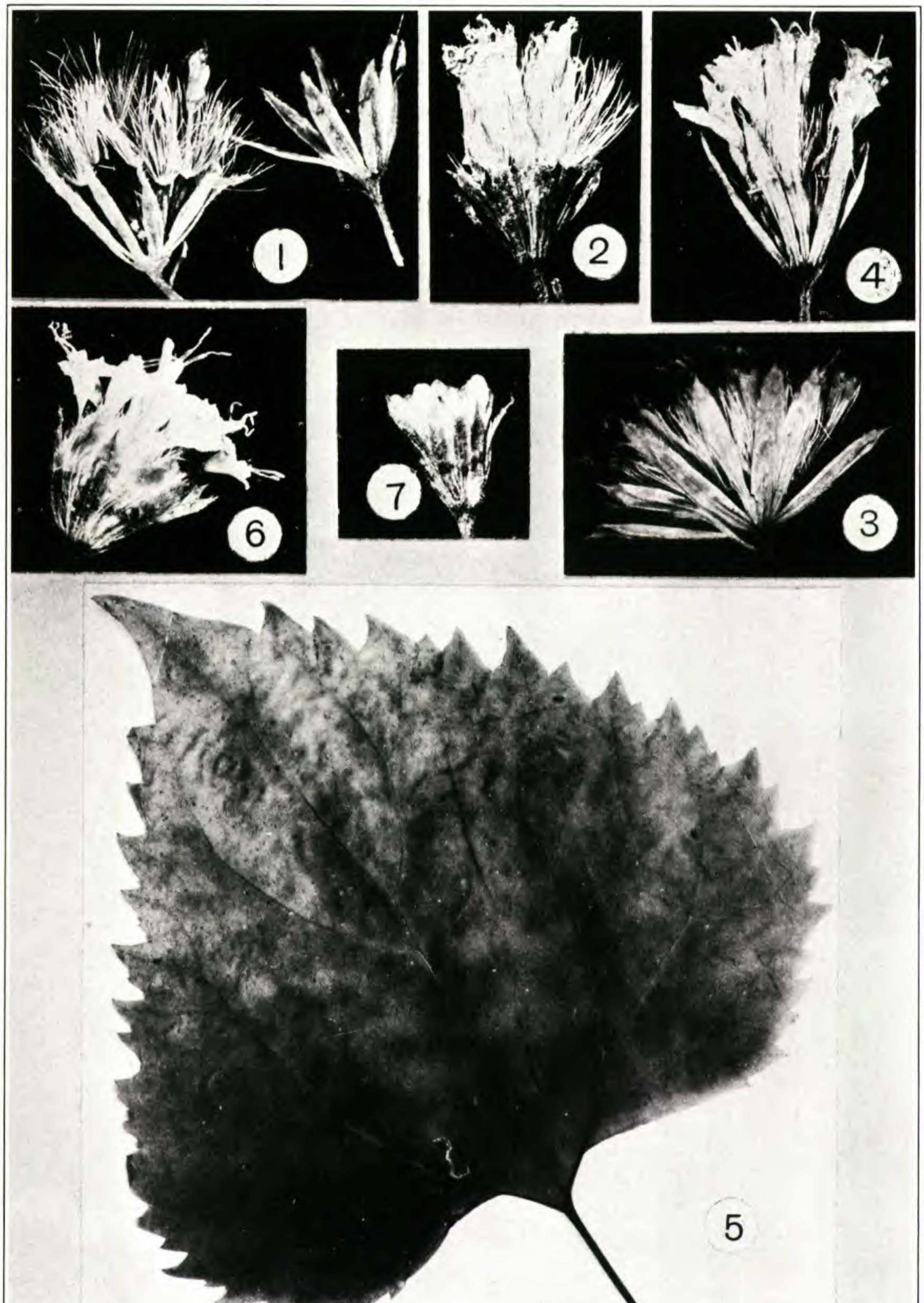


Photo. B. G. Schubert.

EUPATORIUM RUGOSUM: FIG. 1, head and involucre. Var. ANGUSTIFOLIUM: FIG. 2, head. Var. ROANENSE: FIG. 3, head. Forma VILLICAULE: FIG. 4, head. All × 4. E. LUCIAE-BRAUNIAE: FIG. 5, leaf, × 1; FIGS. 6 and 7, flowering and budded head, × 4; all from TYPE.

hirsuta, hyssopi foliorum aemula, virginiana of Plukenet (1691), from which Linnaeus obviously drew the name. The figure of Plukenet and the plate of Dillenius are unequivocal. They are of a plant of eastern Virginia (FIG. 1) thence north somewhat locally to southern Rhode Island and south to Alabama, with the lower primary leaves narrowly lanceolate or oblanceolate and entire or slightly toothed, the middle and upper ones entire, the principal ones 5–10 mm. broad. It occurs in moderately dry to damp soils.

This plant passes insensibly into one (FIG. 3), usually much commoner, with all the leaves narrowly linear to linear-oblanceolate, often revolute, mostly quite entire and ranging from 0.5–5 mm. broad, occurring generally north on dry sands and in open pinelands to southeastern Massachusetts, and south to Georgia. This is *E. linearifolium* Walter, Fl. Carol. 199 (1788), clearly described "foliis linearibus integris subverticillatis, calycibus 3 ad 5-floris".

In the other direction typical *Eupatorium hyssopifolium* passes to a plant with all or nearly all the primary leaves serrate to almost laciniate (FIG. 2). The principal primary leaves are lanceolate or linear-lanceolate and 5–17 mm. broad. It occurs in dry to wet soil from Pennsylvania to Kentucky, south to Florida, Alabama and Louisiana. In its most extreme development (with prolonged teeth) it is *E. hyssopifolium*, var. *laciniatum* Gray, Syn. Fl. N. Am. i^2. 98 (1884). The plants with somewhat lower and shorter teeth are *E. Torreyanum* Short in Transylv. Journ. Med. n. 32, viii. 575 (1836).

These three plants, strikingly different in their extremes, so clearly merge that it is most difficult to sort them into exclusive piles. In involucre, corolla and achene they seem to be inseparable, and they all have the consistent habital character, the development of crowded and suppressed branches, forming fascicles in the axils of all but the lowest leaves. Our representation from southeastern Virginia is as follows.

E. HYSSOPIFOLIUM L. (typical). NORTHAMPTON COUNTY: Capeville, no. 5497; Eastville, no. 5496; Bell's Haven, *Fogg*, no. 9728. PRINCESS ANNE COUNTY: Cape Henry, *Killip*, no. 6680; Virginia Beach, nos. 2948, 5064 and 5070; Rosemont, no. 5065; Macon Corners, no. 2949. NORFOLK COUNTY: Great Dismal Swamp, north of Wallaceton, no. 13,795. ISLE OF WIGHT

COUNTY: Bailey's Beach (McKimmie's Wharf), near Rushmere, no. 12,845; west of old Fort Boykin, no. 13,794. SURRY COUNTY: Claremont, no. 12,844. SUSSEX COUNTY: southwest of Lambs, no. 7644. NANSEMOND COUNTY: Kilby, no. 5066. SOUTHAMPTON COUNTY: southwest of Applewhite's Church, no. 11,450.

*Var. LACINIATUM Gray. ELIZABETH CITY COUNTY: west of Hampton, no. 5071. PRINCESS ANNE COUNTY: Dam Neck, no. 4706. NORFOLK COUNTY: Lake Drummond, Great Dismal Swamp, west of Wallaceton, nos. 13,476 and 13,793. ISLE OF WIGHT COUNTY: Cat Pond, south of Benns Church, no. 7642. SOUTHAMPTON COUNTY: moist sandy and peaty shore of Whitefield's Millpond, no. 14,429. PRINCE GEORGE COUNTY: south of Upper Brandon, no. 9165.—These are identified with the TYPE of var. *laciniatum*, which I am designating as the plant of Bedford County, Virginia, September 10, 1871, *A. H. Curtiss*, which, obviously, was the chief basis of Gray's variety. See p. 366.

*Var. **linearifolium** (Walt.), stat. nov. *E. linearifolium* Walt. Fl. Carol. 199 (1788). NORTHAMPTON COUNTY: Eastville, no. 5495. JAMES CITY COUNTY: 1 mile west of Williamsburg, *Grimes*, no. 3190. PRINCESS ANNE COUNTY: Virginia Beach, no. 5067; Rosemont, no. 5068. NORFOLK COUNTY: Northwest, *Heller*, no. 1239. ISLE OF WIGHT COUNTY: south of Lee's Mill, no. 12,840. SURRY COUNTY: Cobham Bay, northwest of Chippokes, no. 12,841; Claremont, no. 12,842.

PLATE 737 is of foliage of the three varieties of EUPATORIUM HYSSOPIFOLIUM, all × ½: FIG. 1, typical E. HYSSOPIFOLIUM from north of Wallaceton, Virginia, *Fernald & Long*, no. 13,795; FIG. 2 of the TYPE of var. LACINIATUM; FIG. 3 of var. LINEARIFOLIUM from Rosemont, Virginia, *Fernald & Long*, no. 5068.

As noted, *Eupatorium hyssopifolium* and its confluent varieties have fascicles of suppressed branches in the axils of all but the lowest leaves. Another plant of southeastern Virginia (PLATE 738, FIGS. 1 and 2), there found in rich, mostly calcareous, woods and thickets, might be considered a very extreme development of *Eupatorium hyssopifolium*, much larger and with broader leaves than in *E. hyssopifolium*, var. *laciniatum*. This calcicolous and broader-leaved plant, however, usually does not develop axillary fascicles, or the axillary branches are few and not fascicled. Instead, it has the habit of *E. altissimum* or of very large *E. leucolepis*, with the involucre of *E. hyssopifolium*. I can relate it closely only to *E. anomalum* Nash, described from Florida but now known from southeastern North Carolina.[1] It so far departs, however, from *E. anomalum* that I am calling it

[1] Here I place the material distributed without specific identification from pineland at Fort Fisher on the Lower Cape Fear Peninsula, New Hanover County, North Carolina, *Godfrey*, no. 6193. It is a close match for Nash's type.

*E. **saltuense,** sp. nov. (TAB. 738, FIG. 1 et 2), caule erecto subtereto 0.9–1.4 m. alto superne minutissime hirtello; foliis caulinis 12–14-jugis patentibus vel laxe adscendentibus glabris vel subtus minute hirtellis; primariis lanceolatis acuminato-attenuatis 6.5–11 cm. longis 1.3–2.5 cm. latis serratis, dentibus plerumque 12–15-jugis, basi angustatis sessilibus vel imis breviter petiolatis; corymbo 1.8–3 dm. latis; involucris 6–7 mm. altis, phyllaribus 3-seriatis puberulis obtusis, externis ovato-oblongis, internis oblongis apice scariosis; acheneis 3 mm. longis acute angulatis.—Rich woods, thickets and clearings, southeastern VIRGINIA: thicket back of sand-beach of Cobham Bay, James River, northwest of Chippokes, Surry County, August 25, 1940, *Fernald & Long*, no. 12,846 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.); rich alluvial woods and thickets back of sand-beach of James River, below Sunken Meadow Beach, Surry County, August 23, 1938, *Fernald & Long*, no. 9166; rich calcareous wooded ravine west of Claremont, Surry County, August 23, 1940, *Fernald & Long*, no. 12,847; open pine and oak woods about 3 miles southwest of Waverly, Sussex County, October 20, 1936, *Fernald & Long*, no. 6880; dry sandy woods, thickets and clearings north of Moore's Mill, Sussex County, July 19, 1936, *Fernald & Long*, no. 6413; wooded banks of Appomattox River, Petersburg, Dinwiddie County, September 24, 1939, *Fernald & Long*, no. 11,451; dry woods about 5 miles east of Burgess Station, Dinwiddie County, August 26, 1939, *Fernald & Long*, no. 11,166. See p. 366.

Differing from *Eupatorium hyssopifolium* L. (pl. 737, FIG. 1), its var. *laciniatum* Gray (FIG. 2) and var. *linearifolium* (Walt.) Fernald (FIG. 3) in its broad leaves without crowded axillary fascicles, at most producing few short branches in some of the upper axils. In involucres, flowers and fruits it is very similar to the others; but the habital difference seems to separate it quite definitely from *E. hyssopifolium*. Nearly related to *E. anomalum* Nash, but that more southern species (FIGS. 3 and 4) has relatively short and broad leaves and more tapering and narrower phyllaries, and its heads are on definitely bracted pedicels.

In PLATE 738, FIG. 1 is the TYPE of EUPATORIUM SALTUENSE, × ½; FIG. 2, an involucre, × 4. FIGS. 3 and 4 are of E. ANOMALUM from near Lloyds, Florida, *A. H. Curtiss*, no. 6902; FIG. 3, larger cauline leaves, × ½; FIG. 4, an involucre, × 4.

*E. RECURVANS Small. Extended north from Georgia and southeastern South Carolina. NORFOLK COUNTY: damp old clearings and thickets, eastern side of Great Dismal Swamp,

north of Wallaceton, no. 13,796; wet sandy and peaty shore near entrance to the Feeder Ditch, Lake Drummond, Great Dismal Swamp, no. 13,797; similar habitat, near entrance to Portsmouth Ditch, Lake Drummond, nos. 13,798 and 13,799. SURRY COUNTY: open clearing, Hog Island, no. 12,843 (leaves not recurved, but with shape and size as well as with the involucre of *E. recurvans*). See p. 366.

E. TORTIFOLIUM Chapm. Range extended westward into SOUTHAMPTON COUNTY: dry sandy pine and oak woods 6 to 7 miles south of Franklin, no. 8867.

E. SESSILIFOLIUM L., var. VASEYI (Porter) Fern. & Grisc. Range extended to SURRY COUNTY: woods and thickets back of sand-beach of James River, Claremont, no. 13,792.

E. RUGOSUM Houtt. (*E. urticaefolium* Reichard). To the few recorded stations in the southeastern tidewater counties add the following. SUSSEX COUNTY: rich woods, Moore's Mill, no. 7647; dry woods by Nottoway River, Green Church Bridge, northwest of Owen's Store, no. 14,032. GREENSVILLE COUNTY: rich wooded slope just above the "fall-line" by Three Creek, northwest of Emporia, no. 14,031. PLATE 740, FIG. 1.

*E. RUGOSUM Houtt., var. **roanense** (Small), stat. nov. *E. roanense* (as "*roanensis*") Small, Man. Se. Fl. 1326 (1933). CRAIG COUNTY: Potts Mts., alt. 910 m. *Steele & Steele*, no. 118.—Although Small described his *E. roanense* only from Roan Mt. in western North Carolina and eastern Tennessee, with "bracts somewhat spatulate" (see PLATE 740, FIG. 3), this characteristic extreme follows the mountains from Potts Mountains (separating Craig County, Virginia, from Monroe County, West Virginia) to northwestern Georgia (*Ravenel* in Gray Herb.).

*E. RUGOSUM Houtt., var. **chlorolepis,** var. nov. (TAB. 739), foliis primariis late ovatis acuminatis basi rotundatis vel subcordatis utrinque strigoso-setulosis 5–10 cm. longis 3–6.5 cm. latis; involucris 4–5.5 mm. longis, phyllaribus herbaceis viridiscentibus oblongis vel late linearibus valde nervosis.—Surry County, VIRGINIA: woods and thickets back of sand-beach of James River, and rich calcareous wooded ravines along the James, Claremont, September 7, 1941, *Fernald & Long*, nos. 13,784 and 13,785, October 10, 1941, *Fernald & Long*, no. 14,034 (TYPE in Herb. Gray., ISOTYPE in Herb. Phil. Acad.). See pp. 363 and 371. IN PLATE 739 all figures are from the TYPE, FIG. 1, summit of stem, × 1, FIGS. 2–4, heads and involucre × 4.

Characterized by its broad and herbaceous phyllaries (FIGS. 2–4), much broader than the linear-attenuate scarious ones (PL. 740, FIG. 1) of typical *Eupatorium rugosum*. Although the wide-spread *E. rugosum* may have the leaves as small as in var. *chlorolepis*, they are usually much larger (up to 1.8 dm. long and

1.1 dm. broad), generally smoother and only rarely subcordate. The broad and strongly costate phyllaries, green and herbaceous except for the short scarious tip, at once mark the variety. In a region (the very rich calcareous slopes to the James) which is famous for the great size of foliage of most species we should expect *E. rugosum* to have large leaves, for, in much less favorable spots in the southeastern counties the thin and smooth noncordate leaves of typical *E. rugosum* are 8–15 cm. long and up to 10 cm. broad. The involucre of var. *chlorolepis* suggests that (FIG. 2) of the southwestern var. *angustatum* (Gray) Blake (Arkansas, Louisiana and Texas), but the phyllaries are more corrugated and the ovate leaves rounded to subcordate at base, whereas in var. *angustatum* they are very narrowly ovate to broadly lanceolate, with strongly tapering bases. In width of phyllaries var. *chlorolepis* is comparable with var. *roanense* (noted above); but that characteristic variety of the Blue Ridge or of the Alleghenies, from the borders of Virginia and West Virginia to Georgia and Tennessee, has very full heads, with the phyllaries (FIG. 3) dilated upward and with broadly scarious margins.

The plant with villous stems and petioles described by me as *Eupatorium urticaefolium*, var. *villicaule* is only a trivial form,[1] rather than a true geographic variety. Its involucre (FIG. 4) is that of typical *E. rugosum* and its foliage is characteristic of typical *E. rugosum*. FIG. 4 is from the type.

Of close affinity to *Eupatorium rugosum* is the very local species of Whitley County, Kentucky, *E. Luciae-Brauniae*[2]; but the cordate-deltoid leaves (FIG. 5) and the tiny involucres (FIGS. 6 and 7) with caudate-tipped phyllaries mark that little known plant.

In PLATE 740 the involucres and heads are all × 4, the leaf × 1. FIG. 1 shows a fruiting head and a separated involucre of EUPATORIUM RUGOSUM from northwest of Emporia, *Fernald & Long*, no. 14,031; FIG. 2, a flowering head from the TYPE of var. ANGUSTATUM; FIG. 3, a flowering head of var. ROANENSE from Highlands, North Carolina, *Harbison*, no. 1105; FIG. 4, from TYPE of forma VILLICAULE.

FIGS. 5–7 are from the TYPE of E. LUCIAE-BRAUNIAE, a characteristic leaf, a flowering head (FIG. 6) and a younger head (FIG. 7).

[1] EUPATORIUM RUGOSUM Houtt., forma **villicaule** (Fernald), stat. nov. *E. urticaefolium*. var. *villicaule* Fernald in RHODORA, x. 87 (1908). *E. rugosum*, var. *villicaule* (Fernald) Blake in RHODORA, xliii. 558 (1941).

[2] E. **Luciae-Brauniae**, nom. nov. *E. deltoides* E. L. Braun in RHODORA, xlii. 50 (1940), not *E. deltoideum* Jacq. (1798) nor Poepp. ex Spreng. (1826).

Carphephorus bellidifolius (Michx.) T. & G. Two range extensions northward. Isle of Wight County: dry sandy woods northwest of Raynor, no. 13,471. Southampton County: dry sandy oak woods southwest of Applewhite's Church, no. 13,782.

Chrysopsis graminifolia and Allies in Virginia and the Carolinas (Plates 741–744).—The characteristic series of plants of sands of the Coastal Plain and sands or silicious rocks of adjacent provinces, which, in the aggregate, passes as *Chrysopsis graminifolia* (Michx.) Ell., is very complex. By early American authors treated as a single variable species, it seems to consist of a considerable number of localized trends, comparable with those in *Aster*, *Solidago* and *Antennaria*. By Small it was treated in his Flora of the Southeastern United States, 1181 and 1182 (1903) as 9 species. Some of the latter, *C. flexuosa* Nash, *C. latifolia* (Fernald) Small, *C. Ruthii* Small, *C. oligantha* Chapm., *C. microcephala* Small and, perhaps, *C. Tracyi* Small, are sufficiently definite as to stand as local species. There are apparently others to be differentiated in the most southern States. These I am not attempting to deal with; but the splendid series from eastern North and South Carolina assembled by Mr. Robert K. Godfrey and the recent series from eastern Virginia gives evidence that, whereas the elongate basal leaves are essentially alike in all these plants, there are very real differences in habit and involucres.

Although in 1903 and again in 1913 (his Fl. ed. 2) Small considered these plants of the *Chrysopsis graminifolia* series to be members of *Chrysopsis*, in his Manual (1933) he removed them to *Pityopsis* and divided this hardly worth-while genus into three series of species, two of which, his "II. *Graminifoliae*" and "III. *Asperae*", are well represented in Virginia and the Carolinas. *Pityopsis*, series *Graminifoliae* he characterized, "Peduncles, branches and stem woolly-tomentose", the *Asperae* having "Peduncles, branches, and sometimes the stem, glandular". Under the *Asperae* the only species in Small's treatment which concerns us is *P. aspera* (Shuttleworth) Small, with "outer bracts of the involucre . . . glandular". Desperately floundering in the complexities of the group and trying to match the plant of eastern Virginia with relatively short and glabrate or glabrous but stipitate-glandular involucre, in 1937 (Rhodora,

xxxix. 455) I called it *C. graminifolia*, var. *aspera* (Shuttleworth) Gray, in contradistinction to the plants with glandless and pilose or lanate involucres which, following Small, I then called *C. graminifolia*.

Shuttleworth seems never to have published *Chrysopsis aspera*. The binomial first appeared as the synonymic basis for *C. graminifolia*, var. *aspera* Gray, Syn. Fl. N. Am. i². 121 (1884), Gray defining an all-inclusive *C. graminifolia* (Michx.) Ell. as "silvery sericeous", with "bracts [phyllaries] many-ranked, glabrate, sometimes granulose-glandular on back; peduncles when glabrate, often hirtellous-glandular", and of this "silvery-sericeous" plant he proposed

> "**Var. áspera** (*C. aspera*, Shuttlew. in distrib. coll. Rugel), a glabrate rigid and polycephalous state, near St. Marks, Florida (probably on the very coast), the stem and leaves sparsely glandu'ar-hispidulous."

Just what Gray had as var. *aspera* I am unable to say, no plant so named by him being now in the Gray Herbarium, although a *Rugel* specimen from Florida, received since Gray's death, sufficiently matches his description. It is apparently a trivial state of the plant with copiously glandular involucre. The specific or, with Small, serial character "Peduncles . . . glandular", as opposed to "Peduncles . . . woolly-tomentose", too often breaks: for instance, a single specimen of *C. nervosa* (Willd.) Fern. (*C. argentea* (Pers.) Ell.) from Northampton County, Virginia (*Fernald, Long & Fogg*, no. 5503), has 2 large heads, with glandless involucres, but one head is on a silky-pilose almost glandless peduncle, the other with the peduncle copiously stipitate-glandular. Most commonly, however, when stipitate glands abound on the peduncles they are equally abundant on the involucres; but some plants, in general quite like ordinary small-headed *C. aspera*, have the involucres with no stipitate glands, or a few only on the lowest phyllaries.

Incidentally, if, before taking up *Chrysopsis aspera* as a species, Small had consulted the original description of *Inula graminifolia* Michx. Fl. Bor.-Am. ii. 122 (1803), the basis of *C. graminifolia* (Michx.) Ell. Sk. ii. 334 (1824), he would have found that it was clearly described "calycibus turbinatis; squamis numerosis, acutissimis, superne glandulosis . . . *Hab.* a Carolina ad Floridam, frequens". Small defines *C. aspera* with "outer

bracts of the involucre lanceolate, glandular". The difference is not evident. Persoon, working with Michaux's collections in 1806, maintained *Inula graminifolia*, "argenteo-sericea, . . . fol. lanceolato-linearib. nervosis, . . . squamis acutissimis medio glandulosis . . . Cal. parvuli Conyzae, carina serrato-glandulosa", and, immediately following, described as a new species, presumably found in Michaux's material,

> "*Inula argentea*, sericea, fol. lanceolatis trinerviis erectis flexuosis, corymb. subcomposito stricto. Hab. in Pennsylvania. Color pl. argenteo-virens. Fol. lanceolato-acuminata, cauli subappressa. Antecedenti colore et foliis similis, sed flor. multo majores, squamae calycin applantae, pubescentes".—Pers. Syn. ii. 462 (1806).

Inula argentea is, evidently, the common, usually nonglandular plant (PLATE 743, FIG. 3 and PL. 744, FIG. 3) which follows the sands northward to Delaware; and when Nuttall placed *I. graminifolia* Michx. and *I. argentea* Pers. in his subgenus *Chrysopsis* in his Gen. ii. 151 (1818), he explicitly defined *I. graminifolia* with "calix . . . glandularly pubescent" while *I. argentea* had "calix . . . pubescent, not glandular". Nuttall apparently erred, however, in placing *Erigeron nervosum* Willd. under *I. graminifolia* and there is apparently no justification for his citing the plant with glandular involucre from Delaware, where *I. argentea* alone is known. Nuttall gave for *I. graminifolia* (glandular involucre) the range "Delaware to Florida", for the glandless *I. argentea* "Virginia to Florida".

As to *Erigeron nervosum* Willd. Sp. iii³. 1953 (1803), with "*Habitat in* America *boreali*", his description was rather detailed:

> "*5. ERIGERON *nervosum*. W.
> E. foliis lineari-lanceolatis integerrimis sericeis, nervosis, floribus paniculatis. W.
> Nerviges Berusungskraut. W.
> *Habitat in* America *boreali*. ♃ (v. s.).
> Caulis *erectus simplex albo-tomentosus*. Folia *alterna inferiora quadripollicaria, summa semipollicaria et breviora, stricta rigida, lineari-lanceolata acuta integerrima . . . nervosa viridia, subtus pilis sericeis adspersis albidis obsita*. Panicula *terminalibus simplex, pedunculis tomentosis*. Calyx *imbricatus, squamis oblongis*. Corolla *non vidi*. Pappus *rufescens pilosus*. W."[1]

Willdenow said nothing about glands on the involucre. His

[1] This unusualiy full description was characterized by E. L. Greene in Erythea, ii. 93 (1894) as "worse than a *nomen nudum*, and that specific name should therefore be allowed to remain unemployed."

Erigeron nervosum was, with scarcely a doubt, the commonest coastwise species of eastern America, *Chrysopsis argentea* (Pers.) Ell. (PL. 743, FIG. 3, and 744, FIG. 3).

As pointed out to me by Mr. Robert K. Godfrey, when he was tentatively working over his Carolina collections, *Chrysopsis microcephala* lacks the prolonged and horizontal stolons which are found in carefully collected *C. nervosa*. This character seems to be a fundamental one, just as it is in *Antennaria*. One series is cespitose or subcespitose, with the erect new leafy basal offshoots close to the flowering stem or merely on very short and promptly assurgent offshoots; the other series, although sometimes with approximate erect leafy tufts, generally produces prolonged and flagelliform stolons (see PL. 744, FIG. 1), these eventually terminated by the characteristic basal rosettes from which, the following season, new flowering stems arise. In carefully collected material this difference in the vegetative habit is striking; in merely "grabbed" (not "grubbed") specimens the inconclusive identifications have to be by matching specimens. The character, glandular or nonglandular involucre, etc., is, it would seem, less fundamental. True *C. graminifolia* (*C. aspera*) PL. 742, FIG. 3, with abundant stipitate glands on the involucre, passes into a state habitally quite like it but with the glands nearly obsolete; and, under the silky tomentum, the involucres of *C. nervosa* may sometimes show abundant but minute viscid trichomes or glands.

Returning to the division of the series on habit, the specimens in the Gray Herbarium give the following results. To the series with cespitose or subcespitose habit belong *C. graminifolia* (*aspera*), PL. 742, FIG. 3, *C. microcephala*, PL. 741, FIG. 3, *C. Correllii* (see below), PL. 741, FIGS. 1 and 2, and *C. latifolia;* to the series with flagelliform stolons *C. nervosa* (*C. graminifolia* of authors and *C. argentea*), PL. 743, FIG. 3 and 744, FIG. 3, *C. Tracyi* (too near the last), *C. oligantha* and *C. adenolepis* (see below), PL. 742, FIGS. 1 and 2. *C. Ruthii* and *C. flexuosa*, with subequal and loosely spreading cauline leaves, are not habitally like the others. Within these two series there are parallel tendencies. The species with involucres glandular but otherwise glabrous have the leaves of the peduncles few and scattered; those with the involucres pilose to silky-lanate have the equally pubescent

leaves of the peduncles very numerous and imbricated, so that they and the lowest phyllaries seem confluent.

Upon these characters I am grouping the species of the *graminifolia* series in Virginia and the Carolinas as follows, it being clearly understood that, when types of Michaux, Persoon, Willdenow and some others are available again, the applications of some names may necessarily change.

a. Plants cespitose or tufted, the basal offsets erect or at most short and promptly assurgent stolons....*b.*

b. Involucre glabrous or essentially so at base, 6–10 mm. high (to tips of inner phyllaries); phyllaries and peduncles stipitate-glandular or glutinous, the phyllaries not conspicuously merging into the few scattered leaves of the peduncle.....1. *C. graminifolia.*

b. Involucre silky-lanate at least at base, the outer phyllaries and the abundant and imbricated upper leaves of the peduncles intergrading.

Involucre (to tips of inner phyllaries) 5–8 mm. long, at first mostly heavily lanate at base; principal phyllaries oblong-lanceolate, the inner with broad pale chartaceous margins; new heads well formed at expanding of the earlier ones.....2. *C. microcephala.*

Involucre 8–13 mm. long, only sparsely lanate; phyllaries linear and herbaceous except for the very narrow margins; first heads greatly overtopped by stiffly ascending branches and branchlets terminated by undeveloped heads.....3. *C. Correllii.*

a. Plants with prolonged flagelliform or filiform prostrate stolons and eventual slender rhizomes.

Involucre glabrous or nearly so except for the glandular phyllaries; the outer gland-bearing phyllaries not merging into the scattered upper leaves of the peduncles.4. *C. adenolepis.*

Involucre pilose to silky-lanate, glands if present partly hidden or inconspicuous, outer phyllaries gradually merging into the often imbricated leaves of the peduncles.

Principal phyllaries broadly linear to linear-lanceolate or narrowly oblong, 1–1.4 mm. broad, chartaceous except for green midrib.

Inflorescence a loose and open corymbiform panicle, with elongate slender branches.....5. *C. nervosa.*

Inflorescence a slender cylindric thyrsiform panicle with abbreviated erect branches.....5a. *C. nervosa*, var. *virgata.*

Principal phyllaries narrowly linear, 0.6–1 mm. broad, strongly herbaceous except for very narrow scarious margins.....5b. *C. nervosa*, var. *stenolepis.*

1. C. GRAMINIFOLIA (Michx.) Ell. Sk. ii. 334 (1824); DC. Prodr. v. 326 (1836); Bertol. Misc. Bot. vii. 33, t. 3 (1848), Bertoloni's plate being excellent, his description accurate: "Fibrae radicales e rhizomate brevissimo ortae . . . Folia . . . radicalia caespitosa, . . . Pedunculi monocephali, foliis exiguis, paucis instructi, glandulisque stipitellatis adspersi. Calathus imbricatus, squamis lanceolato-linearibus, acutis,

Photo. B. G. Schubert.

CHRYSOPSIS CORRELLII: FIG. 1, TYPE, × 2/5; FIG. 2, head, × 4. C. MICROCEPHALA: FIG. 3, head, × 4.

Photo. B. G. Schubert.

CHRYSOPSIS ADENOLEPIS: FIG. 1, type, × 2/5; FIG. 2, head, × 4.
C. GRAMINIFOLIA: FIG. 3, head, × 4.

dorso hirtis glandulis stipitellatis". *Inula graminifolia* Michx. Fl. Bor.-Am. ii. 122 (1803); Nutt. Gen. ii. 151 (1818). *Erigeron glandulosus* Poiret in Lam. Encycl. Meth. viii. 487 (1808), not Walt. *Diplopappus graminifolius* (Michx.) Less. in Linnaea, v. 144 (1830) at least as to basinym. *Pityopsis graminifolia* (Michx.) Nutt. in Trans. Am. Phil. Soc. n. s. vii. 317 (1841). *C. aspera* Shuttlew. ex Gray, Syn. Fl. N. Am. i². 121 (1884) in synonymy; Small, Fl. Se. U. S. 1182 (1903). *C. graminifolia*, var. *aspera* (Shuttlew.) Gray, Syn. Fl. N. Am. 1². 121 (1884). *Pityopsis aspera* (Shuttlew.) Small, Man. Se. Fl. 1341 (1933).—Siliceous or argillaceous pine or oak woods and openings, northern Florida to Mississippi, north to Virginia. The following selected from a large representation, are characteristic. VIRGINIA: Bowling Green, Caroline County, *Fernald & Long*, no. 9174; Urbanna, Middlesex County, *Hermann*, no. 10,425; 3 miles north of Williamsburg, James City County, *Menzel*, no. 119; Campus, University of Richmond, Henrico County, *M. Ryland;* Chester, Chesterfield County, *Smith & Hodgdon* in Pl. Exsicc. Gray, no. 889; headwaters of Blackwater River, Prince George County, *Fernald & Long*, no. 6711; Gary Church, Prince George County, *Fernald & Long*, no. 6712; Disputanta, Prince George County, *Fernald & Long*, no. 6418. NORTH CAROLINA: Middlesex, Nash County, *Godfrey*, no. 5430; Oxford, Granville County, *Godfrey*, no. 5533; Raleigh, Wake County, *Biltmore Herb.*, no. 1955a; Reidsville, Rockingham County, *Godfrey*, no. 6108; Greensboro, Guilford County, *Wm. Rhoades;* Winston-Salem, Forsyth County, *Schallert;* Sanford, Lee County, *Godfrey*, no. 6894; 10 miles north of Laurinburg, Scotland County, *Godfrey*, no. 5430; between Blowing Rock and Lenoir, Wautaga County, *A. B. Seymour*, no. 65; between Gold Hill and Falls of the Yadkin, Stanley County, *Small & Heller.* SOUTH CAROLINA: west of McBee, Chesterfield County, *Godfrey*, no. 8076; 14 miles south of Columbia, Lexington County, *Godfrey & Tryon*, no. 1302; Caesar's Head, Greenville County, *J. D. Smith.* GEORGIA: Athens, Clarke County, *Wiegand & Manning*, no. 3192; Angusta, ex herb. *Thurber;* north of Quitman, Brooks County, *Harper*, no. 1619. FLORIDA: Live Oak, Suwanee County, *Curtiss*, no. 6939; ? St. Marks, Wakulla County, *Rugel*, no. 484. ALABAMA: southwest of Booth, Autaga County, *Harper*, no. 3265; east of Notasula, Macon County, *Wiegand & Manning*, no. 3191; 16 miles south of Dothan, Houston County, *Wiegand & Manning*, no. 3190; Tensaw, Baldwin County, *Tracy*, no. 8022; west of Mobile, Mobile County, *Harper.* MISSISSIPPI: Ocean Springs, Jackson County, *Seymour & Earle*, no. 91821.43; Biloxi, Harrison County, *Tracy*, no. 4337. PLATE 742, FIG. 3; MAP 1.

As contrasted with *Chrysopsis nervosa* and its varieties, the

only other species of Virginia, *C. graminifolia* shows a pronounced preference for the Piedmont region. As pointed out in an earlier paper we have not found it on the outer coastal sands; nor does it occur in the most sterile pine barrens of the state.

2. C. MICROCEPHALA Small, Fl. Se. U. S. 1182 and 1339 (1903). *Pityopsis microcephala* (Small) Small, Man. Se. Fl. 1341 (1933).—Sandy pineland and sand hills, Florida to eastern Texas, north to southeastern North Carolina, northeastern South Carolina, southern Arkansas and southeastern Oklahoma. The following are characteristic. NORTH CAROLINA: near Southport, Brunswick County, *Godfrey & Shunk*, no. 4141. SOUTH CAROLINA: Hartsville, Darlington County, *Eggleston*, no. 4936; west of Salters, Williamsburg County, *Godfrey & Tryon*, no. 511 (with unusually large and subglabrate involucre, presumably from growing in a drainage-ditch); Santee Canal, Berkeley County, *Ravenel;* west of Bonneau, Berkeley County, *Godfrey & Tryon*, no. 1618; west of Jamestown, Berkeley County, *Godfrey*, no. 8175. GEORGIA: Folkston, Charlton County, *Francis Harper*, no. 668 (as *Aster*). FLORIDA: Jacksonville, Duval County, *Curtiss*, no. 5319 (ISOTYPE); Lake City, Columbia County, *Nash*, no. 2492 (very narrow-leaved); Starks, Volusia County, *Grace Gilbert;* Homestead, Dade County, *Small, DeWinkler & Mosier*, no. 11,162; Marcs, Lee County, *Hitchcock*, No. 138 (slender-leaved). ALABAMA: Gateswood, *Tracy*, no. 8566. ARKANSAS: near Malvern, Hot Springs County, *E. J. Palmer*, no. 29,579. OKLAHOMA: Page, LeFlore County, *G. W. Stevens*, no. 2623. TEXAS: Houston, *E. J. Palmer*, no. 12,727. PLATE 741, FIG. 3; MAP 2; a southern Coastal Plain species.

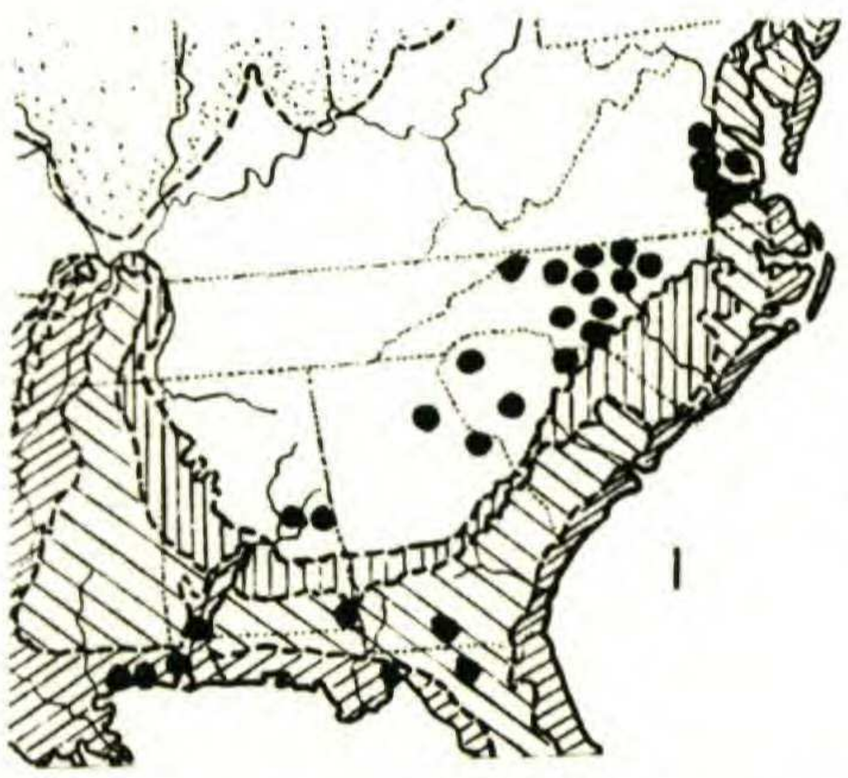
3. C. **Correllii,** sp. nov. (TAB. 741, FIG. 1 et 2). Perennis subcespitosa; foliis radicalibus confertis erectis lineari-lanceolatis elongatis argenteo-sericeis; caulibus 1–4 rigidis scopiformibus 3–7.5 dm. altis argenteo-sericeis; foliis caulinis adpressis; paniculis rigidis corymbiformibus ramis valde adscendentibus; pedunculis imbricato-foliaceis, precosioribus ramulis elongatis capitula immatura gerentibus valde superatis; involucro turbinato 8–13 mm. longo basi sparse lanato, phyllaribus valde imbricatis herbaceis viscidis anguste lineari-attenuatis, majoribus 0.5–0.8 mm. latis; ligulis luteis; pappo sordido.—Southeastern North Carolina and southeastern South Carolina. NORTH CAROLINA: sandy region at White Lake, Bladen County, July 15, 1935, *Correll*, no. 2577 (TYPE in Herb. Gray.); White Lake, August 14, 1938, *Godfrey*, no. 5985; moist rich soil along Drowning Creek, near Wagram, Scotland County, June 18, 1935, *Correll*, no. 1168. SOUTH CAROLINA: sandy bank, 8 miles south of Hendersonville, Colleton County, July 19, 1927, *Wiegand & Manning*, no. 3186. MAP 3.

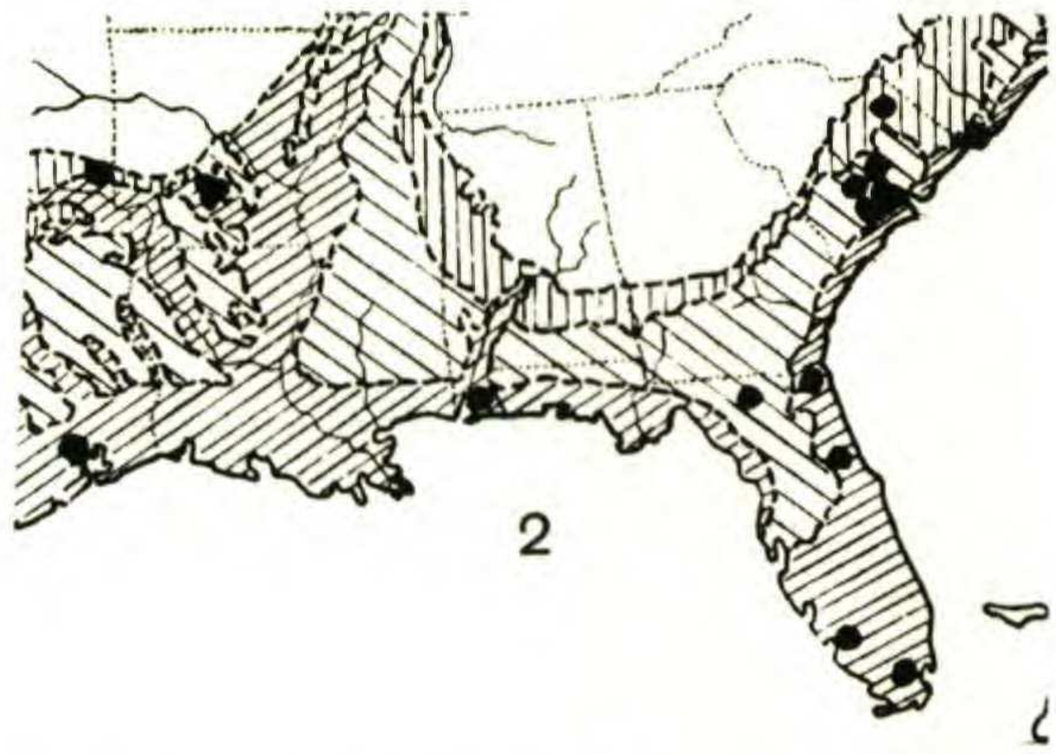
Chrysopsis Correllii is a very early-flowering species, beginning to flower in mid-June. The type (PL. 741, FIG. 1), with only a few fully developed heads and many erect broom-like branchlets with incipient heads, is as far along (July 15) as Godfrey's material of August 14 from the same locality. Correll's other number, collected June 18, is essentially as mature. When the heads terminating the erect lateral branchlets come to anthesis the central heads would doubtless be over-ripe. Although the herbaceous phyllaries are not stipitate-glandular they are so viscid as to adhere closely to the pressing paper. The species seems to be a very local one. It is a great pleasure to associate with it the name of DONOVAN STEWART CORRELL, who has so extensively explored the flora of the Carolinas.

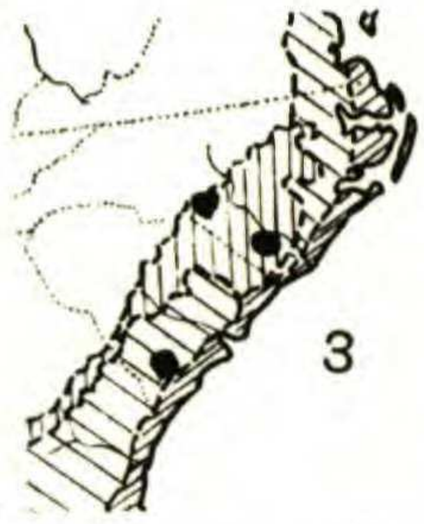
4. C. **adenolepis** sp. nov. (TAB. 742, FIG. 1 et 2). Planta valde stolonifera, stolonibus flagelliformibus bracteoliferis elongatis; foliis imis lineari-lanceolatis prolongatis argenteo-sericeis vel sublanatis, superioribus valde reductis; caule erecto sericeo 4–4.5 dm. alto corymbiformi-paniculato; pedunculis filiformibus stipitato-glandulosis remote bracteolatis; involucris turbinatis 8–10 mm. altis, phyllaribus multi-seriatis linearibus vel anguste lineari-lanceolatis glabris dorso viridibus margine scarioso-chartaceis, exterioribus dorso stipitato-glandulosis; ligulis flavis; pappo sordido-rufescenti.—Moore County, NORTH CAROLINA. old barren fields, Pinehurst, August 19, 1897, *Otto Katzenstein* (TYPE in Herb. Gray.); sandy roadside, near West End, June 30, 1927, *Wiegand & Manning*, no. 3185.

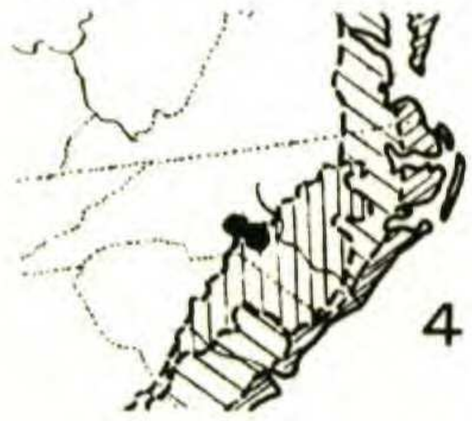
In its glandular involucre at once suggesting *C. graminifolia* of which, when understood, it may prove to be an extreme variation. The flagelliform stolons, the only minutely glandular peduncles and the very slender phyllaries seem to distinguish it. The development or failure to develop flagelliform stolons is so general a character through large and consistent series of specimens that I am giving it much weight in separating *C. adenolepis*. MAP 4.

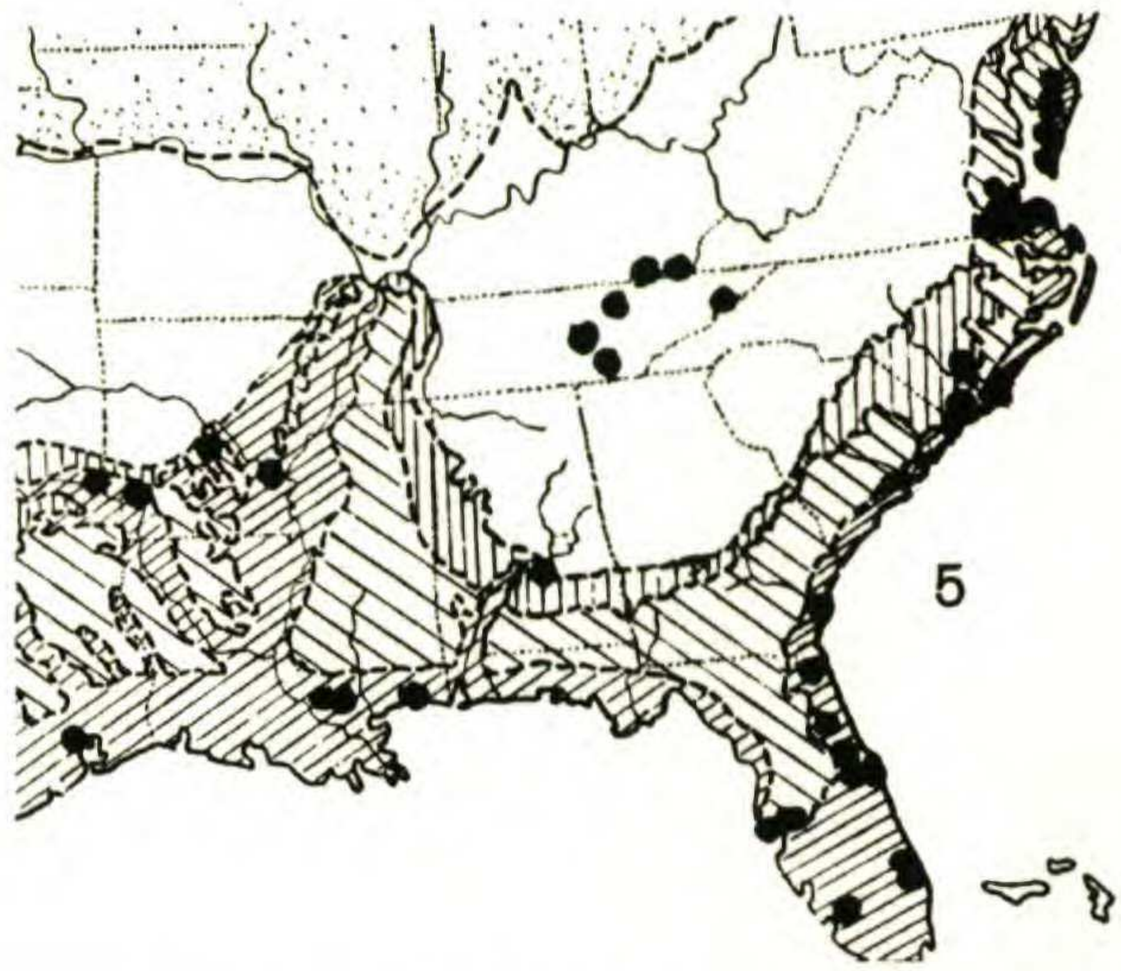
5. C. **nervosa** (Willd.), comb. nov. *Erigeron nervosum* Willd. Sp. Pl. iii³. 1953 (1803). *Inula argentea* Pers. Syn. ii. 452 (1806); Nutt. Gen. ii. 151 (1818). *C. argentea* (Pers.) Ell. Sk. ii. 334 (1824); DC. Prodr. v. 326 (1836). *Pityopsis argentea* (Pers.) Nutt. in Trans. Am. Phil. Soc. n. s. vii. 318 (1841). *C. graminifolia* sensu most recent auth., not (Michx.) Ell.—Bearing elongate flagelliform basal stolons; stems 1–4, 0.15–1.2 m. high; panicle open, with elongate slender branches (rarely with only











MAP 1, Range of CHRYSOPSIS GRAMINIFOLIA; MAP 2, of C. MICROCEPHALA; MAP 3, of C. CORRELLII; MAP 4, of C. ADENOLEPIS; MAP 5, of C. NERVOSA; MAP 6, of C. NERVOSA, var. STENOLEPIS.

1–few heads); involucre 8–13 mm. high, silky-pilose to -lanate, without stipitate glands, the short outer phyllaries passing insensibly into the crowded or imbricated silky upper bracts of the peduncles; the longer scario-chartaceous phyllaries linear to linear-lanceolate or narrowly oblong, 1–1.4 mm. broad.—Dry to moist sandy pine or oak woods, thickets, ridges or openings, or siliceous rock in the interior, Coastal Plain from Florida to eastern Texas, north to southern Delaware, central Arkansas and southeastern Oklahoma; Pine Mountain, southeastern Kentucky, and Cumberland Plateau to Great Smoky Mountains, Tennessee. The following, from a large representation, are representative. DELAWARE: near Terrapin Hill, southwest of Laurel, August 5, 1874, *A. Commons* (although Persoon's *Inula argentea* was said to have come from Pennsylvania and an old specimen in the Gray Herbarium bears in the hand of Elias Durand the data "N. Jersey", I find no authentic record of the plant from north of southern Delaware). MARYLAND: Salisbury, October 3, 1863, *Canby*, with the note: "To show the runners" (more than 3 dm. long). VIRGINIA: Old Town Neck, Northampton County, *Fernald, Long & Fogg*, no. 5503; west of Kiptopeke, Northampton County, *Fernald, Long & Fogg*, no. 5504; Cape Henry, Princess Anne County, *Tidestrom*, no. 3065, *Killip*, no. 6750; Virginia Beach, Princess Anne County, *K. K. Mackenzie*, no. 1729, *Fernald & Griscom*, no. 2913; near Franklin in Isle of Wight County, *Heller*, no. 1122; south of Factory Hill, Nansemond County, *Fernald & Long*, no. 6884; Nottoway Swamp, west of Franklin, Southampton County, *Fernald & Long*, no. 9636; Point Beach, south of Franklin, *Fernald & Long*, no. 11,457. NORTH CAROLINA: 5 miles west of Clinton, Sampson County, *Godfrey*, no. 4525; Carolina Beach, New Hanover County, *Godfrey*, no. 4671; Old Dock, Columbus County, *Godfrey & Shunk*, no. 4179. GEORGIA: Blackbeard Island, *McAtee*, no. 3331. FLORIDA: near Jacksonville, *Curtiss*, no. 1359; DeLand, Volusia County, *G. D. Hurst;* Orlando, February, 1889, *Canby:* Okeechobee region, Brevard County, *Fredholm*, no. 6338; Earman, Palm Beach County, *F. R. Randolph*, no. 59; west of Jupiter, Palm Beach County, March 15, 1924, *Harper;* St. Petersburg, *Mrs. Chas. C. Deam*, no. 2909; Hillsborough County, *Fredholm*, nos. 6481 and 6492; Fort Myers, *J. P. Standley*, nos. 27 and 87. KENTUCKY: Pine Mountain, Bell County, *Kearney*, no. 405; Pine Knot, McCreary County, *H. J. Rogers*, no. 85. TENNESSEE: at 2300 ft. alt., Rugby, Morgan County, *Svenson*, no. 4096; at 2300 ft. alt., 8 miles east of Crossville, Cumberland County, *Svenson*, no. 4147; Wolf Creek, Cocke County, *W. A. Anderson*, no. 1115; Hiwassee Valley, *Ruth*, no. 27. ALABAMA: northeast of Autaugaville, Autauga County, *Harper*, no. 3270. MISSISSIPPI: Biloxi, *Tracy*, no. 6444. ARKANSAS: Rose Bud,

White County, *Demaree*, no. 10,918; Pulaski Heights, Little Rock, *Demaree*, no. 8148; Blue Mountain, Pulaski County, *Demaree*, no. 8808; Counterfit Hollow, northwest of Murfreesboro, Pike County, *Demaree*, no. 9761. LOUISIANA: vicinity of Covington, *Arsène*, no. 11,431; southwest of Hammond, Tangipahoa Parish, *D. S. & H. B. Correll*, no. 9268. OKLAHOMA: Broken Bow, McCurtain County, *Hopkins & Van Valkenburgh*, no. 6146. TEXAS: presumably near Houston, *Lindheimer*, no. 89. PLATE 743, FIG. 3 and PL. 744, FIG. 3; MAP 5.

*Var. **virgata,** var. nov. (TAB. 744, FIG. 1 et 2), paniculis anguste cylindrico-thyrsiformibus ramis erectis valde abbreviatis. VIRGINIA: vicinity of Norfolk, autumn of 1906, *M. C. Jensen;* dry open sandy soil northwest of Magnolia, Nansemond County, October 17, 1941, *Fernald & Long*, no. 14,036 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.). See p. 371.

*Var. **stenolepis,** var. nov. (TAB. 743, FIG. 1 et 2), var. typicae similis, phyllaribus longioribus anguste linearibus 0.6–1 mm. latis valde herbaceis margine angusto scarioso exceptis.—Pinelands and pine barrens, eastern Maryland to South Carolina. MARYLAND: open pine woods along Tonytank Creek, 2½ miles south of Salisbury, September 8, 1938, *R. R. Tatnall*, no. 3971 (transitional). VIRGINIA: dry sandy pine barrens south of Zuni, Isle of Wight County, August 24, 1936, *Fernald & Long*, no. 6710; white sand of dry pine barrens, south of Lee's Mill, Isle of Wight County, August 23 and September 2, 1940, *Fernald & Long*, no. 12,860; sandy and peaty pine barrens, east of Cox Landing, south of South Quay, Nansemond County, September 15 and 22, 1939, *Fernald & Long*, no. 11,456. NORTH CAROLINA: pine woodland, McCullen, Wake County, July 12, 1938, *Godfrey*, no. 4950; pineland, Chocowinty, Beaufort County, July 20, 1938, *Godfrey*, no. 5410; dry sand, Snow Hill, Greene County, July 8, 1922, *L. F. & F. R. Randolph*, no. 756; sand ridge near Goldsboro, Wayne County, September 3, 1938, *Godfrey*, no. 6555; low pineland, Dunn, Hartnett County, August 25, 1938, *Godfrey*, no. 6126; pineland near Lilington, Hartnett County, August 5, 1938, *Godfrey* no. 5638; pineland at Fort Barnwell, Craven County, October 13, 1938, *Godfrey & White*, no. 6832; pineland, Grantsboro, Pamlico County, October 13, 1938, *Godfrey & White*, no. 6828; open woodland, Olympia, Pamlico County, July 12, 1922, *L. F. & F. R. Randolph*, no. 910 (TYPE in Herb. Gray.); pineland near Atlantic, Cartaret County, September 1, 1938, *Godfrey*, no. 6421; open pinelands, Jacksonville, Onslow County, July 20, 1922, *L. F. & F. R. Randolph*, no. 995; pineland near Hallsboro, Columbus County, August 29, 1938, *Godfrey*, no. 6286. SOUTH CAROLINA: excavated, coarse white sandy pockets in pine barrens, 5 miles south of Kingstree, Williamsburg County, August 23, 1939, *Godfrey & Tryon*, no.

1647 (phyllaries unusually blunt); grass-sedge bog or savannah, 12 miles north of Georgetown, June 23–24, 1939, *Godfrey & Tryon*, no. 106; burned-over savannah, 5 miles south of Andrews, Georgetown County, August 11, 1939, *Godfrey & Tryon*, nos. 1372 and 1378. MAP 6.

Var. *stenolepis*, although habitally inseparable from typical *Chrysopsis nervosa*, seems to be a fairly marked variety of pine-lands chiefly of southeastern Virginia and the Carolinas. Var. *virgata*, known only from a limited area in southeastern Virginia, within the range of typical *C. nervosa*, may prove to be only a vegetative form. Typical *C. nervosa*, with one area at high altitude on the Appalachian Upland, the other following much of the Coastal Plain, illustrates the large group of species which, presumably, has retained a foothold on the old core of the continent, where, except in highly silicious soils, conditions are less favorable for them than on the younger sands of the Coastal Plain. It is strongly contrasted with *C. graminifolia*, which has its great development on the Piedmont east of the Alleghenies and on the inner Coastal Plain. It is not wholly satisfactory to keep *C. Tracyi* Small specifically apart from *C. nervosa*. Until the Floridan series is more thoroughly studied I am leaving them apart, as I am an unidentified plant of Florida with stiff branches often overtopping the inflorescences.

In PLATE 741, FIGS. 1 and 2 are of CHRYSOPSIS CORRELLII: FIG. 1, TYPE × 2/5; FIG. 2, head, × 4. FIG. 3, head, × 4, of C. MICROCEPHALA, from ISOTYPE. PLATE 742, FIGS. 1 and 2, C. ADENOLEPIS, from TYPE: FIG. 1, plant, × 2/5; FIG. 2, head, × 4. FIG. 3, head, × 4, of C. GRAMINIFOLIA from near Bowling Green, Virginia, *Fernald & Long*, no. 9174. PLATE 743, C. NERVOSA, var. STENOLEPIS: FIG. 1, portion of small plant, × 1, from east of Cox Landing, south of South Quay, Virginia, *Fernald & Long*, no. 11,456; FIG. 2, head, × 4, from the TYPE. FIG. 3, inflorescence, × 1, of 2-headed plant of C. NERVOSA, from Old Town Neck, Northampton County, Virginia, *Fernald, Long & Fogg*, no. 5503. PLATE 744, FIGS. 1 and 2, C. NERVOSA, var. VIRGATA, from the TYPE: FIG. 1, plant, × 1/3; FIG. 2, head, × 4. FIG. 3, head, × 4, of typical *C.* NERVOSA from near Factory Hill, Virginia, *Fernald & Long*, no. 6884.

SOLIDAGO BICOLOR L., var. OVALIS Farwell. To the recorded stations add others. ISLE OF WIGHT COUNTY: seeping calcareous wooded bluffs by James River, west of old Fort Boykin, no. 13,175. GREENSVILLE COUNTY: wooded bottomland of Nottoway River below Double Bridge, north of Orion, no. 13,802.

S. ARGUTA Ait. On the calcareous bluffs along the lower James, west of old Fort Boykin, this and other species reach phenomenal size, our no. 13,176 having basal leaves up to 3.4 dm. long and 1 dm. broad, no. 13,804 being 2 m. high, with panicle-branches nearly 5 dm. long. See p. 345.